

REMARKS

Reconsideration and withdrawal of the rejections set forth in the Office Action dated May 21, 2009, is respectfully requested in view of this amendment. By this amendment, the specification has been amended, claims 6-10 have been cancelled, claims 1, 2, 11 and 12 have been amended and claim 17 has been added. Claims 1-5 and 11-17 are pending in this application.

The specification has been amended to bring paragraph [0015] into conformity with Fig. 6, by correction of the colloquial English. This is also in accord with the Examiner's observation, that in Figs. 1 and 6, the waveguide has no physical structural relationship with the reaction tube plate.

Claims 1 and 11 have been amended to describe the sample contained in the reaction tube and a condensing lens. Claim 2 has been amended to incorporate the feature of the parabolic mirror, formerly described in claim 7. Claim 6 has been cancelled and rewritten in dependent form as new claim 17, depending from claim 2. Claim 17 sets forth the feature of the lamp including a ellipsoidal reflecting mirror further comprises a focusing lens.

It is respectfully submitted that the above amendments introduce no new matter within the meaning of 35 U.S.C. §132.

In the outstanding Office Action, the Examiner rejected claims 1-16 under 35 U.S.C. §112, second paragraph, as being indefinite; and rejected claims 1-16 under 35 U.S.C. §103(a) as being unpatentable over Applicant's Admitted Prior Art in view of U.S. Patent Application Publication No. 2003/0002038 to Mawatari (hereinafter *Mawatari*) and U.S. Patent No. 4,689,797 to Olshansky (hereinafter *Olshansky*). These rejections, as applied to the revised claims, are respectfully traversed in view of the above amendments.

Rejections Under 35 U.S.C. §112

The Examiner rejected claims 1–16 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Specifically, the reference to "the optical waveguide which has a facet shape to be fitted with that of a reaction tube plate " was deemed unclear because there is no physical structural relationship with the reaction tube plate.

Response

Reconsideration and withdrawal of the rejection are respectfully requested. It is respectfully submitted that amended claims 1 and 11 now particularly point out and distinctly claim the subject matter, in that the description of the, "facet shape to be fitted with that of a reaction tube plate" has been cancelled. Claim 6 has been cancelled and new claim 17 does not include a description of the facet shape. Hence, Applicant submits that the rejections of Claims 1 and 11 under 35 U.S.C. §112 are overcome and the rejection of claim 6 obviated.

The present descriptions set forth the configuration, as described in Fig. 6, wherein the light waveguide has a shape of a rectangular cross-section with the aspect ratio of the rectangular plate. In this regard the optical waveguide which has a similar facet shape to that of the tube plate.

It is therefore respectfully submitted that the rejection under 35 U.S.C. 112 should be withdrawn.

Rejections Under 35 U.S.C. §103

The Examiner rejected claims 1-16 under 35 U.S.C. 103(a) over Applicants' Admitted Prior Art in view of *Mawatari*, and taken further in view of *Olshansky*. The rejection, as applied to the amended claims, is respectfully traversed. *Mawatari* is cited as teaching a photothermal spectroscopic analyzer which performs thermal lens spectrometry with a light source comprising

an index guided type semiconductor laser with a waveguide. *Olshansky* is cited as teaching an index guided semiconductor laser with a faceted waveguide.

Response

This rejection is traversed as follows. To show obviousness under §103, it is necessary to show an incentive to benefit from the change. *KSR International Co. v. Teleflex Inc. et al.*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007).

"The proper question to have asked was whether a pedal designer of ordinary skill, facing the wide range of needs created by developments in the field of endeavor, would have seen a benefit to upgrading Asano with a sensor. In automotive design, as in many other fields, the interaction of multiple components means that changing one component often requires the others to be modified as well." (*id* at 127 S.Ct. 1744)

A demonstration of obviousness under §103 requires that the combination represent a design step well within the grasp of a person of ordinary skill in the relevant art. *id*.

"KSR provided convincing evidence that mounting a modular sensor on a fixed pivot point of the Asano pedal was a design step well within the grasp of a person of ordinary skill in the relevant art. (*id* at 127 S.Ct. 1746)

The standard for anticipation under 35 USC 102 and obviousness under 35 USC 103(a) following KSR is detailed in *Forest Labs v. Ivax Pharmaceuticals*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007). In *Forest Labs*, the court determined that a reference mentioned a particular chemical component, but did not explain how to obtain it and therefore deemed that, "A reference that is not enabling is not anticipating." The court then deemed the product was therefore unobvious over that reference.

Applicants' claims describe:

"... a thermoelectric element supplying heat into reaction tubes ... a heat transmission block which transmit the heat to the reaction tubes ... a lamp which irradiates light with uniform intensity to sample contained in the reaction tube, a condensing lens and the optical waveguide; and an optical system comprising receiving part for receiving fluorescence irradiated from the sample"
(Claim 1; claim 11 similar.)

The real-time monitoring apparatus of the claimed subject matter uses a light irradiation source comprising a lamp and an optical waveguide to irradiate uniform light into a sample within a reaction tube. The light in the light waveguide is propagated in a manner of total internal reflection, and the light beam at the end of the light waveguide becomes a uniform two-dimensional light source. By using the uniform light beam, the reaction progress may be more easily measured over the whole range of the reaction tube (see paragraph [0051] of Applicants' disclosure). In addition, as shown in Fig. 3 of Applicants' disclosure, the light intensity at the edges of reaction tube plate has more than 85% of light intensity in the center of reaction tube plate by using the apparatus of the claimed subject matter (see paragraph [0068] of Applicants' disclosure). This is a significant improvement over prior art configurations, because the light intensity at the edges of the plate is merely about 50-60% of that in the center in case of conventional monitoring apparatus (see paragraph [0061] of Applicants' disclosure).

Mawatari relates to a photothermal spectroscopic analyzer having separate excitation light source and probe light source (see Fig. 1 of *Mawatari*). Although the expression "waveguide" is disclosed in the [0100] of *Mawatari*, the exact meaning thereof seems to be different from that of the claimed subject matter. More specifically, *Mawatari* discloses that a semiconductor laser which can be used as a light source is classified into an index guided type or a gain guided type. Between these, an index guided type semiconductor laser is desirable for excitation light because it has characteristics such as a single spectrum in comparison with a gain guided type, small output variation and astigmatism of 10 μm or less (see [0099] of *Mawatari*).

In addition, *Mawatari* describes that a "waveguide type" index guided type semiconductor laser is desirable for a probe light like the case of the excitation light (see *Mawatari* at paragraph [0100]). The expression "waveguide type" has been disclosed only in that context throughout *Mawatari*'s specification. The characteristics or properties of the waveguide are not disclosed at all by *Mawatari*.

As mentioned previously, the presently claimed subject matter and *Mawatari* use *different* measuring mechanisms to measure *differently* and therefore achieve their results in a *different* manner. The apparatus as described by Applicants and set forth in claims 1 and 11 monitors biochemical reaction by analyzing the receiving fluorescence reflected from the sample. An example of this is found in Applicants' paragraphs [0051] and [0052]. In contrast, the apparatus of *Mawatari* uses thermal lens spectrometry which measures heat emitted by the measuring object upon light irradiation (see *Mawatari* at paragraphs [0013] and [0014]). Therefore, the claimed subject matter and *Mawatari* have different measuring mechanisms. *Mawatari* merely discloses the expression "waveguide type" in which a different type of reaction mechanism occurs. *Mawatari* describes a configuration in which the effect of the waveguide is completely different from Applicants' claimed subject matter. Accordingly, *Mawatari* "teaches away from" Applicants' claims 1 and 11, under the standards set forth in *KSR* and *Forest Lab*.

The *Olshansky* reference relates high power single spatial mode semiconductor laser. Therefore, it is submitted that Applicants' claimed subject matter and *Olshansky* have different purposes and configurations. In this regard, it is noted that *Olshansky* is cited for the use of a faceted waveguide, which appears to be depicted in Fig. 3B of *Olshansky*. *Olshansky* does not appear to describe any further features relevant to Applicants' claims and in particular fails to cure the defects of the *Mawatari* reference. Applicants' claimed subject matter and *Olshansky* are completely different from in both purpose and configuration. Therefore, it is submitted that the claimed subject matter cannot be derived from the cited references.

Applicants therefore respectfully submit that Applicants' Admitted Prior Art taken in view of *Mawatari* and *Olshansky* do not fairly teach or suggest all the features as recited in claims 1, 6 and 11. It is therefore respectfully submitted that the rejection under 35 U.S.C. 103(a) should be withdrawn.

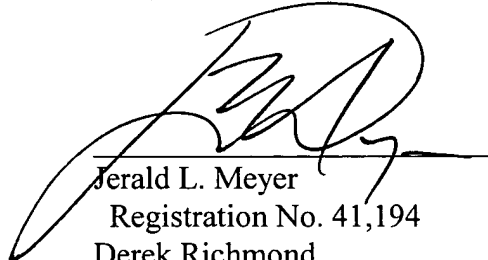
CONCLUSION

In light of the foregoing, Applicants submit that the application is in condition for allowance. If the Examiner believes the application is not in condition for allowance, Applicants respectfully request that the Examiner call the undersigned.

Respectfully submitted,
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